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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,373	09/26/2003	Sung Joon Bae	2658-0308P	1438
2292	7590	08/11/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			CHAN, EMILY Y	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/670,373

Applicant(s)

BAE ET AL.

Examiner

Emily Y Chan

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 9-26-04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-22 is/are allowed.
- 6) ☐ Claim(s) 1-6 and 9-18 is/are rejected.
- 7) ☐ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 7 –8, 11 and 17 are objected to because of the following informalities:

In claim 7, "the a scan direction" should be " a scan direction". In additional, " the adjacent signal wires" recited in claim 8, "the first common voltage" recited in claim 11, and "the second common voltage" recited in claim 17 lack antecedent basis.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3, 9-10 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley ('754) in view of Field et al ('653).

2. Regarding to claim 1 and 9, Henley ('754) discloses an apparatus and a method (see fig. 2 and abstract) for inspection a flat display device (10), comprising: a magnetic sensor (40) for scanning on signal wires (drive lines 14 and gate lines 16) along a scan direction crossing a plurality of the signal wires (see Col. 3, line 66); and a detection circuit (37) for detecting at least one of a short or an open circuit (shot circuit defect) on the signal wires (14 and 16) based on magnetic field generated by the magnetic sensor (40).

Henley ('754) does not specify that his magnetic sensor (40) detects current on the signal wires and the detection circuit (37) detects at least one of a short or an open circuit based on the current of the signal wires detected by the magnetic sensor (40).

Field et al ('653) disclose a short circuit detection performed on a plan structure (see abstract) and exclusively teach a magnetic sensor (16) for detecting current flows on the signal wires (conductors) for the short circuit detection.

It would have been obvious to one of ordinary skill in the art to add the feature of detecting current by the magnetic sensor for short circuit location as taught by Field et al ('653) into Henley ('754)'s magnetic sensor for the expected benefit of processing magnetically obtained current data to accurately detect short circuit defects as disclosed by Field et al ('653) (see Col. 2, lines 35-38).

3. Regarding to claims 3 and 13, Henley ('754) teach that his magnetic sensor (40) performs a secondary scanning on at least one of the shorted signal wires (see col. 4, lines 7-19) parallel with a longitude direction of the signal wires (14 and 16) to locate a shorted point (see Fig. 3, and Col. 4, lines 20-31).

4. Regarding to claim 10, Field et al ('653) teach that his magnetic sensor (16) comprises a fluxgate sensor (see Col. 4, lines 53-56).

5. Regarding to claim 14, Henley ('754) teach to short the other side of each of the signal wires (14 and 16) (see Col. 3, lines 59-50, "to isolate the involved drive line(s) and/or gate line(s)") upon an open circuit inspection of the signal wires (see Col. 3, lines 54-55 "the panel is tested subsequently for open circuit defects and defective pixels").

Claims 5, and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley ('754) in view of Field et al ('653).

6. Henley ('754) discloses an apparatus and a method (see fig. 2 and abstract) for inspection a flat display device (10), comprising:

a magnetic sensor (40) for scanning a first signal wires (drive lines 14 and gate lines 16) along a first scan direction crossing the first signal wire and for scanning a second signal wire (drive lines 14 and gate lines 16) along a second scan direction crossing the second signal wire (see Col. 3, lines 65-68);

a detection circuit (37) for detecting at least one of a short or an open circuit (shot circuit defect) on the signal wires (14 and 16) based on magnetic field generated by the magnetic sensor (40).

Henley ('754) does not teach that his second signal wires is stacked on the first signal wires and an insulation layer is located between the first and second signal wires. Henley ('754) also does not teach that his detection circuit detects an interlayer short in the signal wires base on the current of signal wires detected by the magnetic sensor.

However, Field et al ('653) disclose that it was well known in the art that a display having a plan structure that contains multiple levels of electrodes and specifically teach a detection circuit (18, 20) for detecting an interlayer short (see Col.2, lines 45, "to detect short circuit defects in a plate structures ") base on a current of signal wires (conductors) detected by the magnetic sensor (16).

It would have been obvious to one of ordinary skill in the art to add the feature of detecting the interlayer short based on the current of the signal wires (conductors)

detected by the magnetic sensor as taught by Field et al ('653) into Henley ('754)'s magnetic sensor for the expected benefit of more accurately determining the location of short circuit defects in plate structures as disclosed by Field et al ('653) (see Col. 2, Lines 29-33).

7. Regarding to claim 16, Field et al ('653) teach that his magnetic sensor (16) comprises a fluxgate sensor (see Col. 4, lines 53-56).

8. Claims 2, 6, 11-12 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley ('754) in view of Field et al ('653) as applied to claims 1, 3, 5, 9 and 13-15 above, and further in view of Henley ('150).

Both Henley ('754) and Field et al ('653) do not disclose a first power supply for supplying a first common voltage to one side of odd-numbered signal wires and a second power supply for supplying a second common voltage different from the first common voltage to one side of even-numbered signal wires.

Henley ('150) disclose a method and an apparatus for testing LCD panel array and exclusively teach (see Fig 5) a first power supply (48) for supplying a first common voltage to one side of odd-numbered signal wires (see Col. 6, line 16) and a second power supply (46) for supplying a second common voltage (ground signal) different from the first common voltage to one side of even-numbered signal wires (see Col. 3, lines 1-5). Henley ('150) further teaches to maintain the other side of each of the signal wire in an insulated state (high impedance signal path) during a short inspection of the signal wires (see Col. 3, lines 27-32).

It would have been obvious to one of ordinary skill in the art to incorporate the first and second power supplies of Henley ('150) into Henley ('754)'s system in view of Field et al ('653) for the expected benefit of being able to test large array easily as disclosed by Henley ('150) (see Col. 1, lines 60-61).

***Allowable Subject Matter***

9. Claims 7-8 and 19-22 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither teaches or suggests a method and an apparatus for inspection of a flat display device comprising a magnetic sensor for scanning signal wires along a scan direction proceeding in a Zig-zag pattern between adjacent signal wires recited in claims 7 and 19 as shown in Figs. 17 and 18.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Scamman et al ('923) disclose a method and an apparatus for locating power plane-to-power plane shorts (see Fig. 2) and exclusively teach that a second plane (2) is stacked on a first plane (1), an insulation layer (17) is located between the first and second planes (see Col. 6, lines 46-47) and a detection circuit detects an interlayer short between the power planes, which are relevant to claims 5 and 15.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Y Chan whose telephone number is 571-272-1956. The examiner can normally be reached on 8:30-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Tokar can be reached on 571-272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ec  
8-4-04

  
**DAVID ZARNEK**  
**PRIMARY EXAMINER**  
8/9/04